THE VETERINARY RECORD

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

No. 13. MARCH 25, 1944 VOL. 56.

Sex Hormones in Theory and Practice*

A. ROBERTSON, M.A., B.SC. (ABER.), PH.D. (EDIN.), M.R.C.V.S.
ROYAL (DICK) VETERINARY COLLEGE, EDINBURGH

When your Secretary wrote inviting me to address this Division, he suggested as a subject "Sex Hormones in Veterinary Practice." This I promptly changed to "Sex Hormones in Theory and Practice," for, as you will see as I go along, while I know a good deal about theory, I have little personal practical experience of the use of these products. Thinking it over later on, I decided to enlarge the scope of the lecture to embrace all the more important hormones concerned with the reproductive system so that the title should really be "The Endocrinology of Reproduction."

ACTIONS OF REPRODUCTIVE HORMONES

I wish to discuss this afternoon hormones produced by the pituitary gland, the gonads and the placenta. The main actions of the more important hormones concerned are summarised in Table I, which I would like now to discuss in a little more detail.

The key to the whole endocrine control of reproduction, so far as present knowledge goes, lies in the pituitary gland. The anterior lobe of this gland controls the activity of the gonads, both male and female, by means of the gonadotrophic hormones. It also influences the development of the mammary gland and is responsible for the secretion of milk. Our only interest in the posterior lobe lies in its production of the hormone oxytocin, which may play a part in the onset of parturition.

Taking the gonadotrophic hormones first of all, these are usually taken as being two in number, the follicle-stimulating hormone (F.S.H.) and the luteinising or interstitial cell-stimulating hormone (L.H. or I.C.S.H.). As you will see from the table, F.S.H. in the female increases the number and size of ovarian follicles and, along with L.H., is probably responsible for the formation of the oestrogenic hormone, oestradiol. In the male it stimulates growth of the germinal epithelium and increases spermatogenesis. L.H., on the other hand, acts on mature ovarian follicles, producing corpora lutea, though there is some evidence to suggest that the secretion of progesterone may be under the control of a separate "luteotrophic" hormone. In the male, L.H. stimulates growth and activity of the interstitial cells and the production of testosterone—hence the synonym I.C.S.H.

The lactogenic hormone of the anterior pituitary (prolactin) probably plays an important part in the initiation and maintenance of milk secretion. Posterior lobe extracts, on the other hand, only concern us because of the fact that they produce uterine contraction due to the presence of an oxytocic principle (oxytocin or pitocin), the importance of which in the initiation of parturition is still a matter of dispute.

Turning our attention next to the ovary, we have to remember that, in addition to producing ova, it elaborates two internal secretions, oestradiol and progesterone, by means of which it regulates the activity of the rest of the reproductive system.

Oestradiol (oestrin or oestrogenic hormone) is formed probably in the follicles and secreted in greatest amount about the time of ovulation. It is responsible for the growth and maintenance during adult life of the secondary sex apparatus, *viz.*, uterus, vagina and mammary gland, and for the secondary sex characteristics, mating behaviour, etc. Progesterone, which is formed by the corpus luteum, is responsible for the post-ovulatory changes in the uterus and mammary gland. It also diminishes uterine activity and inhibits ovulation, thereby suppressing oestrus.

In the testes, in addition to the elaboration of spermatozoa by the seminiferous tubules, you also get production of testosterone by the interstitial cells. This stimulates the development of the secondary sex characteristics in the male and promotes growth of the accessory organs of reproduction, such as the penis, prostate, seminal vesicles, etc.

In addition to acting as a nutritive, respiratory and excretory organ for the foetus, the placenta also functions as an endocrine gland. In the majority of mammals it has been shown to secrete considerable quantities of a (chorionic) gonadotrophic hormone, with effects somewhat similar to those of anterior pituitary extracts, though the hormones are probably not identical. In many species the placenta also produces considerable quantities of progesterone and of an oestrogenic hormone.

ENDOCRINE CONTROL OF THE NORMAL SEXUAL CYCLE

In the male, as is shown in Fig. I, development of the testes and their descent into the scrotum are possibly due to stimulation by the gonadotrophic hormones of the anterior pituitary. These also control the activity of both spermatogenic and interstitial components, *viz.*, maturation of the germinal epithelium and spermatogenesis by means of F.S.H. and development of interstitial tissue and secretion of testosterone by L.H. There would appear to be a steady, but slow, development until puberty, when the interstitial cells greatly increase in activity and the testosterone thus produced stimulates the development of the male secondary sex characteristics with the accompanying increase in size and activity of the genitalia. This activity remains more or less continuous for a considerable period, which is usually much longer than the sexual life of the female.

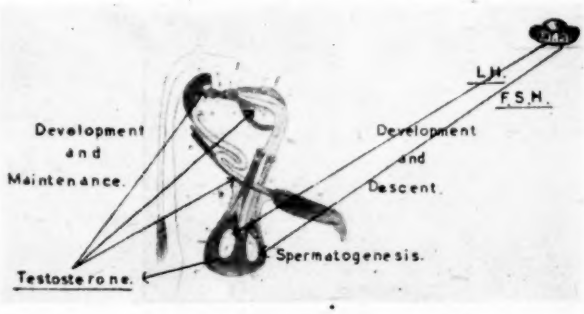


FIG. I.—ENDOCRINOLOGY OF REPRODUCTION—MALE.

* Address to the Dumfries and Galloway Division, N.V.M.A., Dumfries, December 23rd, 1943.

TABLE I
ACTIONS OF REPRODUCTIVE HORMONES

Organ	Hormone	Ovary	Uterus	Vagina	Mammary Gland	Testes	Male Accessory Sex Glands	Other Actions
Pituitary gland	F.S.H.	Follicle maturation				Spermatogenesis		
	L.H.	Corpora lutea formation				Interstitial cell activity		
	Prolactin				Secretion			
	Oxytocin		Contraction					
Ovary	Oestradiol		Hyperaemia Proliferation Increased activity	Stratification	Duct proliferation			Female secondary sex characteristics Signs of oestrus
	Progesterone		Progestational proliferation Activity inhibited		Alveolar development			Oestrus inhibited
Testes	Testosterone						Development and maintenance	Male secondary sex characteristics

In the non-pregnant female, as shown in Fig. II, the general principle involved is the same, though the activity is more markedly cyclical. The anterior pituitary controls the activity of the ovaries by means of the gonadotrophic hormones. These control the liberation of the ovarian hormones which, in turn, influence the rest of the reproductive system. Under the influence of F.S.H. some follicles gradually enlarge and mature, while the theca cells produce increasing amounts of oestradiol. This hormone produces the signs of oestrus and the cyclic changes taking place in the genitalia, *viz.*, pre-ovulatory growth and activity of the uterus and development of the mammary gland. Following ovulation, liberation of L.H. stimulates the development of the corpus luteum and this, in turn, secretes progesterone which further prepares the uterus for the fertilised ovum and produces further growth of the mammary gland.

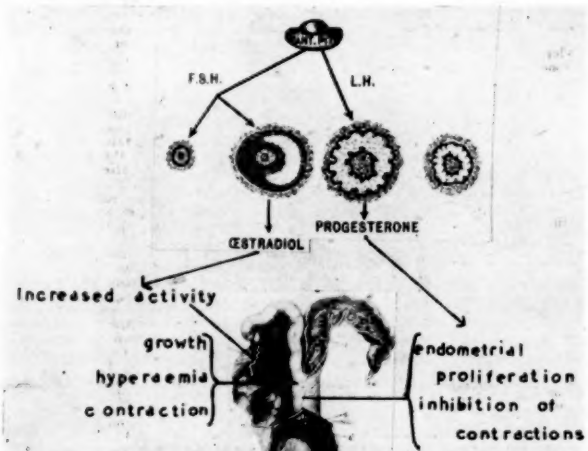


Fig. II.—Endocrine Control of Normal Oestrus Cycle.

Fertilisation of ova must take place within a relatively short period of their liberation. Under normal conditions the unfertilised ovum soon dies and passes out of the uterus. After a short time, degeneration of the corpus luteum occurs and the animal returns to anoestrus or dioestrus.

Fertilisation usually takes place in the fallopian tubes, down which the ova pass slowly, a definite time being needed in each species to permit adequate preparation of the uterus by progesterone. On arrival in such a prepared environment, the ovum proceeds to embed itself in the endometrium, and if such implantation occurs, the corpus luteum persists and develops further. It is suggested that impulses from the pregnant uterus stimulate the pituitary gland to increased secretion of L.H., which causes the corpus luteum to persist (Fig. III). This corpus luteum continues to produce progesterone, which is necessary for the formation of the placenta and the maintenance of pregnancy.

Once the placenta is formed, it acts as a temporary endocrine gland secreting (*a*) gonadotrophic hormone, which is mainly luteinising in its effect and presumably reinforces the L.H. of the anterior pituitary in maintaining the corpus luteum; (*b*) progesterone, which reinforces that of the corpus luteum in maintaining pregnancy; (*c*) oestrogen, the function of which may be to synergise the action of progesterone and which may also play a part in increasing uterine motility towards the end of pregnancy.

Near the end of pregnancy there is a gradually increasing contractility of the uterus which eventually culminates in parturition. The cause of this is not clearly understood, but there are probably a number of factors concerned, such as the degeneration of the corpus luteum with a diminution in the secretion of progesterone; an increase in the production of free oestrogen by the placenta, which stimulates the activity of the uterus and increases its reactivity to oxytocin; and thirdly, an increased output of oxytocin

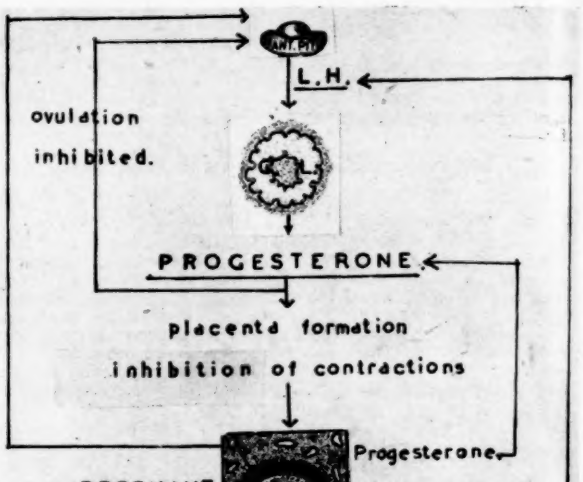


Fig. III.—Hormonal Interrelations During Pregnancy.

by the posterior pituitary. Of these, probably the second is the most important factor.

The endocrine control of reproduction does not cease with the birth of the young. During pregnancy oestradiol and progesterone have produced growth of the mammary gland ducts and alveoli. The actual secretion of milk at parturition is stimulated by prolactin, which is also concerned in the maintenance of lactation.

This theoretical knowledge has so far found two main practical applications, *viz.*, the diagnosis of pregnancy by hormonal means and hormone therapy.

Diagnosis of Pregnancy

Human urine during pregnancy contains chorionic gonadotrophin, which is the basis of the Ascheim-Zondek test. When injected into immature mice it gives precocious sexual development, with enlargement of the uterus and vagina, whilst the ovaries show enlarged follicles and blood spots. Domestic animals, unfortunately, do not excrete appreciable amounts of gonadotrophic hormones in the urine during pregnancy. In the mare, however, there are considerable quantities of F.S.H. in the blood stream from about the 45th day of pregnancy, reaching a maximum from about the 60th to the 90th day. One can therefore do a modified Ascheim-Zondek test, using blood serum.

The urine of the pregnant mare contains considerable quantities of oestrogen from about the 60th day, reaching its maximum at the 90th to 120th day. When this is injected into ovariectomised mice there are typical oestrous changes which are detected by vaginal scrapings showing typical cornification of the epithelium. A similar test can be used in the bitch, and is diagnostic from about the 15th to the 18th day. No such test, however, has yet been found reliable in the early stages of pregnancy in cattle.

Hormone Therapy

The late Professor A. J. Clark once wrote, "The application of experimental results to clinical conditions is always slow and difficult, but in the case of sex hormones there are exceptional difficulties, and the chief danger at present is that the whole subject will be discredited by attempts to utilise these substances clinically before the necessary minimum of knowledge has been acquired." This is still as true to-day as when written. The system of endocrine control is very complex and only partly understood. In fact, the outline given above is to be regarded more as a statement of "reasoned probabilities" than as definitely ascertained facts. There is, moreover, a wide species variation in effects which has not been fully investigated.

Since the gonadotrophic hormones form the key to the control of the whole system, one would expect them to be the most useful in functional disorders. Unfortunately, being protein in nature, they have proved difficult to isolate in the pure state and so, for

therapeutic purposes, we are limited to products of variable nature and potency.

Anterior pituitary extracts have been available for a number of years and contain varying amounts of F.S.H. and L.H. according to the source and method of preparation. Their use has, therefore, been largely empirical, but it is claimed that they give a fair degree of success in sterility associated with functional disorders of the reproductive system which have no obvious cause. Nowadays it is possible to get a fair degree of separation of the two hormones, since in pregnant mare's serum F.S.H. usually predominates, whereas in human pregnancy urine there is usually an excess of L.H. Most modern therapy which attempts to be rational therefore concentrates on the use of these products—P.M.S. and P.U.

The term oestrogens is given to a group of substances which, like oestradiol, produce the changes observed at oestrus. They are found in both male and female gonads and in various other tissues and fluids, such as placenta, blood, urine, etc. The naturally occurring oestrogens like oestradiol, oestriol, oestrone, etc., vary in potency according to their source and are only really effective when given parenterally. Synthetic oestrogens now available, such as stilboestrol and hexoestrol, are almost as potent as the naturally occurring product and can be given orally.

The androgens are a group of substances with the same actions as testosterone. They have been isolated from both male and female, but the products usually available are either testosterone itself or a derivative androsterone found in male urine. There is also a synthetic product, methyl testosterone, which is active when given orally.

Progesterone-like substances, which produce the changes associated with the luteal phase of the ovarian cycle, are usually either progesterone itself or the less active synthetic product pregneninolone.

Clinical Application

In the male gonadotrophic hormones have been used occasionally in cryptorchidism. Thus in man pregnancy urine was at first claimed to give spectacular results, but the articles are not now so enthusiastic. The only record I have come across in the veterinary literature[1] does not give very conclusive evidence of the efficacy of such treatment, and similar trials in the "Dick" College have not proved very encouraging.[2] More hopeful is its use in infertility in bulls. Bottomley *et al.* at Reading[3] claim encouraging results in cases where the sperm count was low and motility poor. Androgens are used occasionally in the human to aid in the treatment of cryptorchidism or to overcome the degenerative effects of castration, but there are few records of their use in veterinary work.[4] Oestrogens are also being tried in man for treatment of carcinoma of the prostate, and are claimed to give some regression of symptoms.

The majority of recorded attempts at hormone therapy in veterinary literature deal with sterility in the female. Thus, F.S.H. is recommended for anoestrus in heifers associated with ovarian hypoplasia,[5] 1,000-2,000 I.U. of P.M.S. given subcutaneously being claimed to give normal oestrus in a few days. If there is any likelihood of a corpus luteum being present, it is recommended that such treatment be avoided. The treatment is also expensive and the few detailed records I have come across are not very encouraging.[6] It does appear to be more successful in the treatment of prolonged anoestrus in mares[6, 7, 8], and it has also been used successfully for sterility in bitches.[9]

Luteinising hormone has been used successfully for the treatment of cows which come regularly into oestrus but fail to conceive following service by potent males.[3] It would appear also to be useful in the treatment of nymphomania in mares.[7]

Oestrogens[10, 11] are used mainly either for their stimulating action on the uterus or to produce "oestrogen shock," which is said to stimulate functionless ovaries, possibly by acting on the pituitary gland. Stimulation of the uterus by such means has been tried for the treatment of pyometra, mummified foetus, retained foetal membranes and the induction of abortion, but in view of the conflicting results obtained it is difficult to assess their value.

Oestrogen shock therapy[12, 13] is suggested for the treatment of anoestrus in cattle owing to its relative cheapness and to the fact that P.M.S. may be risky, unless the ovaries are small and inactive. A large dose of oestradiol or stilboestrol will produce oestrus, but it seems unlikely that there will be ovulation unless it was impending anyhow. It is claimed, however, that such treatment often re-establishes regular oestrous cycles and service at the next recurrent oestrus is usually fertile. But such little experience as I have had of the treatment has not been very encouraging and similar experiences have been recounted to me by a number of practitioners, so I have my doubts as to whether stilboestrol will live up to the glowing accounts originally recorded.

References

[1] Adams, S. H., and Hector, A. (1942.) *Vet. Rec.* **54.** 5.
[2] Burgess, J. W. (Unpublished observations.)
[3] Bottomley, A. C., Folley, S. J., and Watson, H. M. S. (1939.) *J. agric. Sci.* **30.** 235.
[4] Kearns, W. M. (1942.) *J. Amer. vet. med. Ass.* **100.** 197.
[5] Bhattacharya, P., Hammond, J., Jr., and Day, F. T. (1941.) *Vet. Rec.* **53.** 460.
[6] Cameron, H. S. (1942.) *J. Amer. vet. med. Ass.* **100.** 60.
[7] Day, F. T. (1939.) *Vet. Rec.* **51.** 1113.
[8] Gunn, R. M. C. (1942.) *Aust. vet. J.* **18.** 13.
[9] Scorgie, N. J. (1939.) *Vet. Rec.* **51.** 266.
[10] Report. (1942.) *Ibid.* **54.** 103.
[11] Note by N.V.M.A. Survey Committee. (1942.) *Ibid.* **54.** 518.
[12] Folley, S. J., and Malpress, F. H. (1941.) *Ibid.* **53.** 551.
[13] Montgomerie, R. F., and Brownlee, G. (1941.) *Ibid.* **53.** 567.

Discussion

Dr. Watts, on opening the discussion, expressed his appreciation of Dr. Robertson's masterly and instructive address. He spoke of abortion in the bovine where no infective agent could be demonstrated and desired information as to the usefulness of progesterone therapy in such cases. He asked if hormone therapy was of value in expelling retained foetal membranes in cattle. Later he wished to know how hormone preparations were standardised.

Mr. Kennedy, after adding his quota of thanks to the speaker, asked about the derivations of the nomenclature of hormone preparations. Later he spoke of anoestrus in heifers in winter and raised the question of the effects of temperature and rations which would be favourable to breeding as opposed to rations which merely were conducive to good appearance.

Mr. Hector spoke of his experience in administering antuitrin-S to a 2½-year-old crytorchid and asked Dr. Robertson why he appeared doubtful as to the efficacy of the preparation in causing the descent of the testicles.

Mr. Gibson stated that the practitioner usually used hormone therapy empirically. He raised the question of animals coming into oestrus after conception and was of the opinion that this was due to stimulation from the vagina and that on examination such animals were often found to be suffering from cervicitis and/or vaginitis. He later made amusing reference to administration of stilboestrol in poultry and said that he had been informed that it increased the egg yield from fowls.

Mr. Barr related his experience in cases of frigidity in aged bulls—sex desire being practically non-existent. Perandren administered to such animals caused the bulls to be active sexually, but though they served females the latter did not conceive. In virgin heifers administration of stilboestrol gave very bad results if they were not served at the first oestrus. The second oestrus did not appear for very long periods. If they were served at the first oestrus, however, the animals sometimes conceived. Stilboestrol in cases of retained foetal membranes gave disappointing results and it appeared in certain cases that metritis was a sequel. He wondered whether the metritis had any connection with the stilboestrol. With regard to induction of oestrus and conception after service, he had had good results from using pituitary extract followed by P.M.S.

Mr. F. A. Gordon related his experiences in carrying out Voronoff operations on aged valuable bulls which had ceased to breed. One aged bull had commenced breeding again and continued to do so for at least three years.

Mr. A. B. Kerr stated that he had often been somewhat concerned about the external vulnerable location of the male gonads and wondered why the male should be sterile when a cryptorchid.

Mr. Cameron, in the course of his remarks, raised the question of brucella infection of bulls causing sterility, probably due to orchitis and the associated rise of temperature causing degeneration of the seminiferous tubules.

The Reply

Dr. Robertson, in reply, said that with reference to Dr. Watts' question about the use of progesterone to prevent abortion, though it was being tried in cases of threatened abortion in the human, the results were rather conflicting. Even if a diminution in the secretion of progesterone were the cause of the abortions Dr. Watts had in mind, very large doses would be necessary and as these preparations were expensive, Dr. Watts would probably find it cheaper to let the animal abort! The standardisation of these products was in rather a chaotic condition, a least so far as the gonadotrophic hormones were concerned.

He sympathised with Mr. Kennedy on the question of nomenclature, but he could not explain the reason for most of the trade names he mentioned. Many of them seemed to be merely the result of the whim or fancy of the publicity agents of the various firms—certainly they gave no indication of the type of hormone concerned.

With reference to Mr. Hector's objections, he could not agree that the descent of the testicles several months after the administration of the drug had necessarily any connection with the treatment, and therefore he was not convinced that the case for antuitrin-S had been proved by that one record.

He was interested in Mr. Gibson's observations on vaginitis and there might be something in them. It was known from experiments on many species that the pituitary gland could be stimulated reflexly by various means to produce gonadotrophic hormones; and there were, of course, some clinicians who believed that the beneficial effects of intra-uterine injection of iodine solutions, etc., on sterility were mainly a question of stimulation of sensory nerve endings. The remarks on stilboestrol as a means of stimulating egg production were interesting, but he was afraid that the numbers were not statistically significant!

Mr. Barr's experience with perandren was what one would expect as it was an androgen and while it stimulated sex desire it did not increase the animal's ability to fertilise. In fact, in very large doses it might even have the opposite effect. He was interested in Mr. Barr's results with stilboestrol. He also had found that the second oestrus was often long delayed and it was often doubtful in such cases whether the stilboestrol should be given the credit for the return of the oestrous cycle. He had not experience of the use of stilboestrol for retained placenta but could not see any reason why it should produce metritis.

Mr. Kennedy's second question raised some very wide issues. Malnutrition definitely interfered with the oestrous cycle and overfeeding was also credited by some with the same effect. Many factors had been implicated—proteins, minerals, vitamins, etc., but it was too long and too vague a story to go into that afternoon.

He was surprised at Mr. Gordon's successful results with the Voronoff operation. Such operations were seldom attempted nowadays and it would be more rational to use hormone treatment. He sympathised with Mr. Kerr, but the scrotum apparently played a useful part as a thermoregulator. It seemed that the seminiferous tubules in most mammals suffered irreparable damage if exposed to even a slightly elevated temperature for any length of time and Nature had devised this method of overcoming the difficulty. He doubted, however, whether the rise of temperature was the important factor in the production of sterility following orchitis in bulls as suggested by Mr. Cameron.

REPORT

A National Health Service

Some of the main points of the White Paper* have already been briefly summarised† and the essential features of the organisation are shown below. The Government insist that the Minister of Health must be answerable to Parliament for the efficiency of the service, but it is proposed that an independent statutory body, the Central Health Services Council (C.H.S.C.), should be created which will advise on medical matters when requested; it will, also, have the right to initiate enquiry, and advise the Minister on any subjects it thinks fit. The Minister will act through a Central Medical Board (C.M.B.) which, like the C.H.S.C., will consist largely of members recruited from the medical profession.

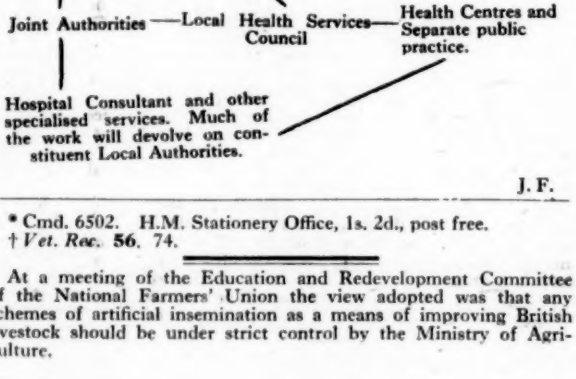
Local administrative areas are often too small and in other ways unsuitable to act as regional areas in which a complete medical service could be organised. It is therefore proposed that joint authorities, on which all the constituent local councils would be represented, should be formed. These regional councils will be responsible for the organisation of hospital consultant and other specialised services in their area, although much of the work will be carried out by the constituent local authorities. The C.M.B. will approve and co-ordinate the work of the joint authorities.

The joint authorities—which, of course, like the Minister, are popularly elected—will be advised by local health services, councils consisting of local medical men. They will also have direct access to the Minister. It is proposed that the voluntary hospitals should continue to function much as before, but those collaborating in the public service will have to observe certain general conditions and be open to inspection.

Doctors will be free to continue in private practice, but those wishing to enter the public service will work either at Health Centres or in separate public practice, depending on the circumstances. Doctors will be responsible to the C.M.B., which will act as "employer" and will be represented by local committees. Those working in a Health Centre will receive salaries, and those working in separate public practices will probably receive a capitation fee.

In order that the Government can carry out its obligation to provide a health service for all it will be necessary to control the entry into practice so that the number of doctors can be increased where there is a deficiency. On the other hand all men now in practice will be allowed to continue in the same locality. The patient will, as at present, be able to choose his doctor from those available locally, and will still be able if he so desires to enter into a private contract for medical care; doctors participating in public practice will not be debarred from private work. The new joint authorities will link general practitioners (whether in grouped or separate practices) to the hospital, consultant and other services in their area.

The need for more doctors of consultant status is stressed and to avoid anomalies some central regulation of remuneration will be required. The consultants taking part in the service will, of course, be associated with one or more hospitals.


Minister
Central Health Services Council. Independent Statutory Body, largely recruited from the profession.
C.M.B. Recruited from profession.
Joint Authorities
Local Health Services Council
Health Centres and Separate public practice.
Hospital Consultant and other specialised services. Much of the work will devolve on constituent Local Authorities.

J. F.

* Cmd. 6502. H.M. Stationery Office, 1s. 2d., post free.
† *Vet. Rec.* **56**, 74.

At a meeting of the Education and Redevelopment Committee of the National Farmers' Union the view adopted was that any schemes of artificial insemination as a means of improving British livestock should be under strict control by the Ministry of Agriculture.

THE VETERINARY RECORD
March 25th, 1944

DEVELOPMENTS IN GOVERNMENT POLICY

THE White Paper which presents the Government's views on the development of "A National Health Service," for discussion by the public and by Parliament, is a State document, which, as Mr. Churchill said, "in ordinary times of peace would rivet and dominate the attention of the whole country." It is of interest to all citizens both because it will influence the scope and quality of medical treatment they can receive, and because it indicates the way the Government is approaching the tasks of reconstruction. It is of particular interest to veterinary surgeons as the future organisation of their own profession is being freely discussed. Some of the main points of the White Paper have already been briefly summarised and a description of the proposed organisation is given in this issue.

Veterinary medicine differs from human medicine in that, of necessity, less attention is paid to the individual animal which may be sacrificed to promote the health and productivity of the herd as a whole. We are therefore not so much concerned with the detailed organisation of the complicated personal health service but with the general methods of organisation and the light they throw on Government policy.

The Government insist that the Minister of Health must be answerable to Parliament for the efficiency of the service, thus maintaining the principle of public responsibility. At the same time they realise that "the practice of medicine is an individual and personal art, impatient of regimentation. Whatever the organisation, the doctors taking part must remain free to direct their clinical knowledge and personal skill for the benefit of their patients in the way which they feel to be best," and perhaps the chief interest of the Paper lies in the attempt to maintain medicine as an individual and personal art whilst at the same time introducing the degree of public responsibility which is made necessary by the insistence of public opinion on a comprehensive medical service available to all.

The *British Medical Journal* gave the White Paper a qualified welcome but it "detects a threat of argument and development leading in a direction which the profession refuses and will refuse to follow—that of whole-time salaried service under the State. If this interpretation is correct, it is useless to deny that there is trouble ahead." The *Lancet* is more wholehearted in its approval and says that "within the framework suggested it would be possible soon to increase the value of medical knowledge to the public, to give most doctors more satisfaction in their work, and in so doing to prepare the way for a really fine service in years to come. . . . Our profession is at last leaving the market place."

We do not wish to comment on the outcome of this controversy but the desire in some quarters that both the veterinary and medical professions should be placed on a whole-time basis is so obvious that it cannot be allowed to pass without discussion. It must be admitted that even if the White Paper does lead to a whole-time service a number of safeguards have been provided. In the first place the Minister will act through the Central Medical Board consisting largely of medical men. Sir William Beveridge himself has said that doctors should not be organised by a civil service and it would seem at long last it is being recognised that administrative officers should have an expert knowledge of the service they administer.

Even the best of men are inclined to dislike effective criticism; one of the greatest defects of an all-embracing whole-time service is that there is only one route of promotion

and consequently those in junior positions—who are doing the work and in the best position to criticise effectively—remain silent. Presumably recognising that informed and independent criticism is essential the White Paper proposes that an independent statutory body, the Central Health Services Council, should be established to advise the Minister. There will also be independent local health services councils to advise the new joint authorities; these local health services councils will also have access to the Minister. Even with these safeguards, however, there is an obvious danger that men will be paid more for office work than for continuing in the practice of medicine. It will be interesting to compare the remuneration of consultants and administrators.

It will be seen, therefore, that although the White Paper envisages the possibility of a whole-time service it has proposed safeguards designed to prevent doctors "being organised by a civil service," although many may not agree that these safeguards will achieve their purpose.

Turning to the veterinary field, none can pretend that there would be any such safeguards if the State service were allowed to expand indefinitely without radical alteration and all veterinary workers were placed on a whole-time basis—a possibility which would probably, as the *B.M.J.* states, "be resisted to the full." In the first place there is apparently no recognition that the veterinary expert is the best man to administer the service. In 1900 William Hunting said, "The statement that as far back as 1877 the veterinary staff was limited to advising whilst laymen were entrusted with administrative duties is a fiction invented to bolster up a false and untenable position." He showed how this position arose when the Board of Agriculture took over the functions of the Veterinary Department of the Privy Council and how similar anomalies in the Army, Navy and medical services were being remedied. In the veterinary field the position was remedied in Sir Stewart Stockman's day but now the head of the Animal Health Division is again a lay secretary.

There would also be no authoritative independent statutory body to advise the Minister; thus developments in the medical field give even more weight to the proposal that an independent animal health corporation should be formed. As a result of the Agriculture Act of 1937 there would be no real influence from the local authorities which in the medical service is bound to produce a diversity of method and possibilities. At present private practitioners acting through the N.V.M.A. provide the criticism of official policy which is necessary for progress. The value of this independent outlook was shown in the early years of the war when, due to the initiative of private practitioners and independent research workers, the survey scheme was launched. The figures show that since its inception this scheme has made steady progress, and in November last the total number of cattle on the panel was over a quarter of a million; the number is still increasing. Veterinary practitioners have therefore already shown they realise, in the words of the White Paper, that "health is something to be positively improved and probed and made full and robust." Practitioners have now been asked to give their considered views on the working of the scheme and it is greatly to be hoped that many of them will do so in order that the N.V.M.A. Council can be correctly guided and armed for the forthcoming discussions. Lack of thought now must not be allowed to impair the success of the scheme and perhaps jeopardise the whole future of the profession in Great Britain.

The White Paper is not really concerned with medical research but it makes the significant statement that the encouragement of research in the hospitals themselves "is a more fruitful method of securing valuable results than the alternative method of multiplying special State institutions for the purpose, and it is of first importance that it should continue and develop, both in the municipal and in the voluntary hospitals and institutions."

In the same way we have often emphasised the importance of research at the colleges, and the dangers of a top-heavy system in which specialised research institutes are expanded, and the colleges are starved of the financial support and facilities which they need to train men to work in the widening fields of practice and research.

IN PARLIAMENT

The National Health Service

Both Houses, on Friday of last week, debated the Government scheme for a new health service for the nation (White Paper: Cmd. 6502).

In the Commons, Mr. Willink, Minister of Health, said that such a service was one of the main pillars on which our post-war structure should rest: it represented the biggest single advance ever made in this country in the sphere of public health. What was wanted was not a doctrinaire scheme, but a natural evolution. He denied that regimentation of the medical profession was intended; the Government did not wish to prohibit or isolate private practice, and the principle of free choice of doctor must be maintained. The Minister then touched on a part of the scheme which he described as some measure of control, although he denied that it meant any sort of direction, to ensure the better distribution of medical practitioners. There was a strong case, he said, for a young doctor serving an apprenticeship under an experienced practitioner, and the Central Medical Board must be able to require the new entrant to give his full time to the public service during the early years of his career in places where the needs of service required it. Having spoken of the importance of a good nursing service, not only in the clinics and hospitals but in the home, Mr. Willink defined the financial proposals affecting the voluntary hospitals, and stated that the Government would be prepared to review the assistance given in respect of teaching work at the teaching hospitals. He expressed the view that there would be scope for contributory schemes. Finally he dealt with the scheme for the rationalisation of the hospital service under area plans.

In the debate which followed, Sir Ernest Graham-Little declared that the scheme would be unworkable if those operating it were intensely resentful of the conditions imposed upon them. When he quoted the answers to questions collected by the British Medical Association as showing an overwhelming majority of practitioners against lay control, and as rejecting a proposal to reduce their profession to a salaried medical service, Dr. Morgan declared that this was misleading the House. The *questionnaires*, he said, were on details, not on principles or policy. Sir Ernest Graham-Little went on to contend that under the Government's scheme the private practitioner would not be as free and accessible as now, and that the voluntary hospitals would be detrimentally affected.

Dr. Haden Guest also disputed Sir Ernest Graham-Little's claim to speak for the whole of the medical profession. To a large proportion of it, he declared, the proposals in the White Paper were acceptable as a reasonable basis for constructive discussion. In view of the financial proposals there could be no question of destroying the voluntary hospitals. A lay view, expressed by Mr. Craik Henderson, was that a complete State service would be inimical to the medical profession.

On the following day the House of Commons adopted Mr. Willink's resolution welcoming the intention of the Government to establish a comprehensive national health service.

Miss Horsbrugh, Parliamentary Secretary to the Ministry of Health, first met the objection taken to the proposal which appeared to empower the Central Medical Board to direct young doctors to particular areas where doctors were scarce. She denied that the Board was to have power of direction, and explained that the young doctors would be at liberty to go to areas where they could devote themselves partly to private and partly to what was called public practice.

Miss Horsbrugh said there would be no interference with the autonomy, status and identity of the voluntary hospitals. Certain conditions would be attached to the proposed Exchequer grants, and the Government would have the right of inspection to ensure that the standard of service was maintained. Pressed by members to explain how it was proposed to fit the voluntary hospitals into the area hospital plans, Miss Horsbrugh explained that these insti-

tutions could contact with the local authorities concerning the share of the area work to be allocated to them. She pointed out that voluntary hospitals would not be forced to participate—although she believed they would be pleased to do so—and that if they agreed they would receive the financial assistance. With regard to the fear that the scheme would diminish the attractiveness of the medical profession, Miss Horsbrugh expressed confidence that it would improve and widen the opportunities of the entrants.

In the House of Lords, to which the motion to welcome the scheme was commended by Lord Woolton, attention was directed by Lord Moran to the power of direction over entrants to the medical profession given to the Medical Board. This he described as a form of conscription, and he asked whether it was to be extended to every other section of the community. This proposal, he said, had aroused the gravest suspicion. Lord Moran regarded the health centre experiment as hopeful. As to the voluntary hospitals, he asked for further safeguards. Do not let them die, he said, until there is something equally efficient to take their place.

Lord Dawson of Penn's criticism of the scheme was that it tried to embrace too much, that the foundations ought to be taken first, and the superstructure built later in the light of experience. The only way of regulating the medical profession was, he insisted, to put at the right hand of every administrative body a vocational body with powers to guide and advise. No body, he said, was more in danger of becoming bureaucratic than the Central Medical Board. He called for financial security for the voluntary hospitals.

. . . . . .

Questions

Milk

Brigadier-General Clifton Brown asked the Minister of Food whether he is aware that, owing to the new milk regulations being put into force in rural areas, many of the dairymen can no longer supply their customers with accredited raw milk and consumers must arrange for pasteurised milk which they do not believe in; and how he proposes to prevent any injurious results of the abolition of small dairymen in country districts.

The Minister of Food (Colonel Llewellin): I regret that I am not sure what my hon. and gallant Friend has in mind, but I should be glad to investigate any particular cases if he will let me know of them.

Brigadier-General Brown: While thanking my right hon. and gallant Friend for his reply, may I ask what is the good of having a standard of accredited milk, and then making it impossible for dairymen to sell it? Would it not be better to enforce the regulations?

Colonel Llewellin: I do not think anything we have done makes it impossible for dairymen to sell accredited milk.

Brigadier-General Brown: A man with over two herds can sell the milk from only one.

Mrs. Tate: Is not the production of accredited milk often rendered farcical, as that milk is often ruined by pasteurisation?

. . . . . .

Dairy Herds (Rations)

Sir D. White asked the Minister of Agriculture if he is aware that by including nurse cows as cows in agricultural returns farmers raising stock are at a disadvantage compared with those who do not do so; that discretionary reserves are barely sufficient for milking stock, let alone nurse cows; and, in view of his stock breeding policy, whether he will reconsider the matter.

Mr. Hudson: I am aware that milk producers who do not rear their own herd replacements may be relatively better off as regards that part of their allowance of purchased rations which is based on milk sales and the number of cows in the herd. Additional rations are, however, allowed in respect of milk fed to calves under one month old, and such rations, in common with all winter rations based on milk output, are independent of the discretionary reserves. The latter are limited because they represent the balance of supplies estimated to be available after ration scales have been fixed for priority classes of stock, including dairy herds, and some allocations have been made for pigs and poultry. Available supplies are, and will continue to be, used to the best advantage to implement the Government's livestock policy.

Weekly Wisdom

Read not to contradict and confute; nor to believe and take for granted; nor to find talk and discourse; but to weigh and consider. —Bacon.

ABSTRACTS

[Osteodystrophic Diseases of Sheep in New Zealand. 1.—Rickets in Hoggets: With a Note on the Aetiology and Definition of the Disease. Fitch, L. W. N. (1943.) *Austral. vet. J.* **19.** 2-20.]

Defective bone-formation in sheep is not uncommon in New Zealand but little has been done hitherto to elucidate the pathology of the various conditions included under this term. In South Africa, Theiler and his colleagues did much to clarify our knowledge of the osteodystrophic diseases of domestic animals and the cumulative results of their work indicate that true rickets in animals is not a simple calcium deficiency. Rickets may be produced experimentally by a dietary deficiency of phosphorus but prolonged calcium deficiency leads to a pathologically distinct condition known as osteodystrophia fibrosa.

The only authenticated record of ovine rickets that the writer was able to find was one given by Marek and Wellman (1931) concerning sheep in Hungary. Innes (1934–5) stated that no fully authenticated cases of rickets in sheep had been recorded in England.

The cases observed by Fitch occurred in various parts of the Canterbury province of New Zealand, chiefly in stud ram hoggets about nine to twelve months old. It was seasonal in its appearance and was usually reported in the winter. Severe cases sometimes persisted into early spring but it was never reported during the summer and autumn.

Affected animals varied from those which showed no symptoms or symptoms so slight that they were only evident to the experienced eye of the shepherd, to those which revealed a marked stiffness and a stumbling action. No gross deformities were present but the extremities of some long bones were swollen and careful palpation sometimes revealed slight swelling of the costo-chondral junctions.

Before proceeding to consider the aetiology of his own cases Fitch first of all summarises the available knowledge of this subject. He discusses the role of calcium and points out that "a simple dietary deficiency of calcium, even when of such severity as markedly to impair bone production, has not resulted in the production of true rickets. . . . It is probably never due to inadequate supply but may sometimes be attributed to subnormal assimilation or retention of calcium." A limitation of the supply of phosphorus to an animal, whether it be due to gross deficiency of the mineral or interference with its assimilation or utilisation, seems to be common to all the methods of producing rickets.

With regard to the cases of rickets referred to in this paper Fitch states that the morbid anatomy of these cases excludes a simple dietary calcium deficiency and this is supported by the fact that the amount of this mineral in the food was in all cases ample. This left the question of a deficiency of phosphorus and/or vitamin D to be considered. The diet of the sheep in question did not suggest a gross deficiency of phosphorus. In one outbreak, the sheep were fed a phosphorus-rich supplement in addition to green oats and turnips. In the second, they were fed green oats exclusively and in the third good young grass and phosphorus-rich supplements before going on to oats. There was thus little chance of the phosphorus intake being inadequate.

With regard to vitamin D, it is stated that the relative freedom from rickets of man and animals receiving no vitamin D supplements has hitherto led to the assumption that solar irradiation provides sufficient vitamin D to prevent this disease in New Zealand. But as the sheep were not receiving any vitamin D supplements and as they had failed to incriminate mineral deficiency as the cause, further consideration was given to this matter. It was significant that the disease was seasonal in its occurrence and that the diet, which was largely or exclusively uncut green food, was unlikely to contain much vitamin D. Experimental work carried out at the Station in the course of this investigation supported the view that the amount of vitamin derived from solar radiation was probably insufficient during the winter months and furthermore an examination of large numbers of metacarpal bones of hoggets showed the prevalence of a subclinical form of rickets. In view of these findings and the characteristic anatomical changes which were present in the affected sheep, Fitch arrived at the conclusion that whilst it is not unreasonable to accept the view that vitamin D is the chief factor concerned there still exists the possibility that some as yet unapprehended phosphorus-immobilising substance may be responsible. [Much of the phosphorus in cereals exists in the form of phytin, a compound in which it is relatively unavailable to animals, but whether the same thing applies to leaves has yet to be established.]

G. D.

[**Use of Phenanthridium Compound in Zebu Cattle with *Trypanosoma congolense*.** Hornby, H. E., *et al.* (1943.) *J. comp. Path.* **53**. 269-279.]

The authors have tested, over a period of 20 months, 7-amino-(p-aminophenyl)-10 methyl phenanthridium chloride (known as phenanthridium compound No. 897) and conclude that it is one of our most valuable trypanocidal agents. All their tests were done on zebu cattle infected either naturally or artificially with *Trypanosoma congolense*. In most cases the treatment was rapidly effective and the drug could be given by the intramuscular route without causing appreciable lameness or any serious lesion. The doses recommended are, for intramuscular injections, at the rate of 15 c.c. of a 0·5 per cent. aqueous solution per cwt. body weight and for intravenous injection 10 c.c. of a 1 per cent. aqueous solution per cwt. body weight. The routine treatment suggested is one intramuscular injection into one quarter; if a relapse occurs, this is repeated in the other quarter; if a further relapse occurs, three intravenous injections at weekly intervals are given; and, if these fail, another trypanocidal drug (*e.g.*, stibophen) should be tried. Experiments on drug fastness indicated that resistance to phenanthridium 897 may be induced in some cases of *T. congolense* infection. To reduce the risk of drug fastness unnecessarily small doses should not be given. For this reason the doses recommended above should be regarded as the minimal doses. Resistance to phenanthridium does not prevent other drugs from succeeding.

The criterion of clinical cure was a series of weekly negative microscopical blood examinations over a period of six months, but such clinically cured animals are not necessarily sterilised; they may be merely unlikely to relapse.

G. L.

* * * * *

[**Inherited Resistance to Brucellosis in In-bred Berkshire Swine.** Cameron, H. S., Gregory, F. W., and Hughes, E. H. (1943.) *Amer. J. vet. Res.* **4**. 387.]

A short paper demonstrating that by inbreeding from two sows and one boar which failed to develop agglutinins to *Br. suis* despite natural exposure, it has been possible to set up a strain of pigs having an inherited resistance to *Br. suis* infection. The inbreeding commenced in 1931. In 1942 28 pigs were tested for resistance by the oral administration of 5 ml. of *Br. suis* culture. Not one of the pigs developed specific agglutinins. Of 34 control pigs 13 remained negative in all dilutions; ten were positive at 1 : 100 or over, while eleven developed intermediate reactions. Similar successful results have been obtained in a smaller inbreeding experiment with resistant Poland China pigs.

J. S. P.

REVIEW

[**A Mixed Bag: Recollections and Reflections of a Surgeon.** By W. Bernard Secretan, M.B., F.R.C.S., Bradley & Sons, Ltd., The Crown Press, Caxton Street, Reading. Price 6s.]

In the first sentence of the introduction to this book the author, Mr. Secretan, states that he is not attempting a formal autobiography. For this we are glad, for autobiographies are often highly boring. Through the pages of this book runs the story of a man with a love of the countryside—its beauty, its charm and its pleasures. He has seen great changes, for he has lived and worked in a time marked by the transition from an almost non-mechanical to a highly mechanised age. He has looked upon this with the air of a philosopher and one can appreciate that whilst he welcomes the new, this welcome is tinged with regrets for what has now gone.

Winding through this review is his own career as a surgeon in a provincial town. His story reflects the great advances that have been made in schools, medical colleges and hospitals, and in medicine and surgery during the last 40 years.

The book is written in a homely, modest style and in good sequence, and the reader may gather that whilst the author has loved all things around him he in turn has inspired the affection of his fellows.

"We cannot expect to be able to build up a prosperous British agriculture on the basis of scrub stock. We are in danger of a very, very rude awakening if what I have seen in Canada is typical of what is happening in other countries. Canadians who have visited Britain have been shocked by what they have seen of our livestock."—*Earl De La Warr.*

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Mar. 29th.—R.C.V.S. Committee Meetings.
Mar. 30th.—Central Veterinary Society. **Luncheon in honour of R.C.V.S. Centenary,** Connaught Rooms, Great Queen Street, Kingsway, W.C.2; *2.30 p.m.*—General Meeting at the Kingsway Hall, Kingsway, W.C.2.
Mar. 30th.—**R.C.V.S. Council Meeting.**
Mar. 31st.—Annual General Meeting of the North of England Division, N.V.M.A., at Houghall, Durham, 11 a.m.
April 1st.—R.C.V.S. Annual Fee due.
Apr. 12th.—Meeting of the North Wales Division, N.V.M.A., at Ruthin, 2 p.m.
Apr. 27th.—Annual General Meeting of the Association of Veterinary Inspectors, in London, 2 p.m.
May 9th.—**R.C.V.S. Council Election.** Last date for receipt of nominations.
May 22nd.—R.C.V.S. Council Election. Voting papers issued.
May 30th.—R.C.V.S. Council Election. Last day for receipt of voting papers.
June 6th.—**R.C.V.S. Annual General Meeting.**
June 7th.—R.C.V.S. Committee Meetings.
June 8th.—**R.C.V.S. Council Meetings.**
June 27th.—R.C.V.S. Examinations begin (provisional date).

* * * * *

Luncheon in Honour of the Centenary of the Royal College of Veterinary Surgeons

As announced in recent weeks in our columns, the Central Veterinary Society will hold a luncheon on Thursday, March 30th, at the Connaught Rooms, Great Queen Street, Kingsway, London, W.C.2, in honour of the Centenary of the Royal College of Veterinary Surgeons. Details are given in our Notices column.

It has now been found that guests (including ladies) can be accommodated and the Hon. Secretary of the Society will, therefore, be glad to receive immediate application for tickets from Fellows for themselves and their guests.

* * * * *

PERSONAL

Birth.—Sinclair.—On March 12th, at 23, Kirkgate, Thirsk, to Audrey Weston, *née* Adamson, wife of D. V. Sinclair, M.R.C.V.S.—a son.

* * * * *

R.C.V.S. OBITUARY

Crowhurst, Frederic, South Lodge, Marden, Kent. Graduated London, December 14th, 1897. Died March 15th, 1944; aged 69 years.

. . . . .

Christopher Harvey (Charles)

An Appreciation

(Contributed)

Captain Christopher Harvey, more familiarly known as Charles, whose untimely death (recently announced in your columns) was much lamented, was born in Cumberland, and was educated at St. Bees' School.

From there, he took the Army Entrance examination and passed out at Quetta Cadet College; he was commissioned in the Indian Army in February, 1917, and served with the 24th Punjabis. Transferring to the Indian Cavalry, he served with the 29th Lancers (Deccan Horse) in France and Palestine, and later with the 27th Light Cavalry on the North-West Frontier, while a further period was spent with Remount Depots.

He married in December, 1920, at Poona, and eventually left the Indian Army in August, 1922. He then proceeded to Australia with a view to farming, but on deciding to take up a veterinary career, returned to England in January, 1924, qualifying at Edinburgh in July, 1928, where he also took his B.Sc.

Captain Harvey accepted an appointment with the Ministry of Agriculture and Fisheries in 1928, serving in Kent, Birkenhead, Bedford, the West and North Ridings of Yorkshire. It was while serving in the latter that he was promoted to the rank of Divisional Inspector in 1940.

There is no need for me to more than remind some of his fellow members of the sterling qualities his broad frame enclosed. At work he was the embodiment of all that was necessary for the job in hand. Ever ready to lend a helping haud. he was the ideal of what a colleague should be. At play, when the day's task was

through, his infectious laugh gladdened the heart of all who enjoyed his company.

Charles had a reputation as a horseman, but I knew him best on the golf course as a great fighter and game to the end; the pastime has lost a staunch supporter.

An indication of his popularity was shown by the numbers who attended the Memorial Service in Northallerton Parish Church on March 4th.

A great character has been removed from our midst, but the memory will never fade.

The sympathy of the profession will go out to his wife and two daughters in their sad bereavement.

* * * * *

The Late Lt.-Col. A. A. Comerford, D.S.O., M.R.C.V.S.

Lt.-Col. Augustine Ambrose Comerford, D.S.O., M.R.C.V.S., whose death we recorded with much regret in our issue of March 4th, was the son of the late M. H. Comerford, M.R.C.V.S., of Stratford and Woodford. Qualifying from the Royal Veterinary College on January 23rd, 1909, he practised at Caxton, Cambs., from 1910 to the outbreak of the Great War.

Colonel Comerford had a distinguished military career, which commenced with service with the R.A.V.C. At Salonika he contracted malaria—which infection periodically affected him, eventually leading to the condition for which he had two serious operations—in 1938 and 1939—and which latterly caused his failing health.

He held the rank of Major R.A.V.C. (T.A.) with the Beds Yeomanry until 1933—when Territorial Veterinary Service was terminated—and afterwards Major R.A. (T.A.) Beds Yeomanry until he took command of the regiment in 1939. Colonel Comerford proceeded to France and Belgium in 1940, where he was mentioned in dispatches and his conspicuous service in the field earned for him the award of the D.S.O. Characteristically he insisted that this honour was really conferred on " his very brave men "—the 52nd Beds Yeomanry Heavy Regiment (R.A.)—when recounting the story of how the regiment held the canal at St. Momelin when Belgium was invaded. " You have to remember," he added, " that they were supposed to be gunners, whereas they were fighting as infantry. I had orders to withdraw, but this was impossible because the French, who were supposed to take over, had not arrived. We were able to hold the Germans up from the Friday until one o'clock on the Sunday morning, when I withdrew the regiment, and the canal was taken later that morning from the French." Evacuated from Dunkirk, he was later in command 1st Coastal Defence Regiment until 1941.

After the Great War Colonel Comerford practised from Potton, Beds, until 1939. He hunted with the Cambridgeshire Foxhounds from 1910 to 1935 and was Secretary and Field Master to the Hunt from 1930 to 1935.

Colonel Comerford was associated with Laidlaw and Dunkin in their work on anti-distemper immunisation, carrying out the early field tests in the Cambridgeshire, Fernie, and Oakley packs.

Colonel Comerford relinquished his commission early in 1942 owing to failing health and took up residence at Reedingworth, St. Ives, Hunts.

* * * * *

THE WORSHIPFUL COMPANY OF FARRIERS

The recent election of Dr. Fred Bullock to the Court of the Worshipful Company of Farriers is a welcome instance of that helpful connection between the farrier and the profession the antiquity of which he himself placed on record in his paper before the Royal Society of Medicine published in our issue of April 27th, 1929. It was further exemplified in similarly happy manner at the Livery Luncheon held on March 15th, 1944, when Colonel Edward M. Curley, Chief of the U.S.A. Army Veterinary Corps, who was the guest of Dr. Bullock, responded for the Visitors, and other veterinarians present included Major Brennan DeVine, Mr. G. N. Gould and Major R. F. Wall.

The Company has resumed the annual luncheon after an interval of about five years, and the Master expressed the desire of the Company to do what it could to encourage young men to become shoeing smiths—an aim of which many members of the profession have voiced their support at recent veterinary society meetings.

Colonel Curley said: " When my paternal grandfather found his bride in London I often wonder if he ever thought that he would have a foreign grandson who would be so honoured as I am to offer an official toast to the Lord Mayor of that great city. You will, therefore, I trust, pardon the personal touch in indicating my extreme pleasure in being selected to respond to the toast 'Our guests.' We ask of you to accept the hearty felicitations of those who are present as your guests. We appreciate the honour greatly.

" It is estimated that the horse preceded man by two million years. The evolution as to size and adaptability has been marked over the years, particularly evidenced by selective breeding which by atrophy or disuse of some of its appendages has given us the ungulata or single-toed animal. Realising the protection such a member required brought into being the crude horse-shoe. That shoe was applied by a craftsman; later with refinements it was soon realised that the same craftsman was an artist, practising his art in a demonstrable, practical way.

" This advent of the shoe brought men of skill and discernment into the trade. Such men were often petitioned to care and offer advice for the minor ailments of the horse. It must be appreciated that to recognise the abnormal one must be appreciative of the normal. Were there any groups of men extant who knew the normal more intimately than the horseshoer? True their treatment was of the empirical type, but nevertheless they were appreciated and held in high esteem. Later such men were referred to as farriers. Such a term has received official recognition by the great State of Pennsylvania, incidentally, my native State.

" Embedded in the granite of the monument depicting the participants of that illustrious State in the struggle for the continuance of unity on the great battlefield of Gettysburg and preserved for all time, let us hope, are the names of a number of farriers.

" We fought the battles of 1776 to establish our independence. We fought the battles of the Civil War to preserve our unity. Is it any wonder that the men who helped to salvage our transport should be honoured?

" The art of horseshoeing was the impetus behind the establishing of our veterinary colleges. Just as the barber trade was the forerunner of surgery, to-day that same art is a science. It is an art to apply a physiological shoe to the foot of a horse, but becomes a science when proper advice is offered to apply a special shoe to correct a pathological condition.

" As a graduate of two of our well-known veterinary colleges in America, I desire to acknowledge our debt to those who gave us the profession which has become the indispensable insurance for the perpetuation of agriculture, the basic industry of any society. Permit me to call your attention to the words recently spoken by a world celebrity: 'The horrible pages of past history fade in comparison with the bloody disaster happening to-day.'

" Thank God we are privileged to congratulate you members of the Worshipful Company of Farriers for perpetuating something old that those who have given us the newer creation of transport may have the incentive to do better things by a realisation of the efforts and accomplishments of your forbears."

* * * * *

IMPORTANCE OF GOOD LIVESTOCK HUSBANDRY IN BRITISH AGRICULTURE

Addressing farmers, farm workers, and landowners at Tonbridge on Wednesday of last week, in the last of his series of mass meetings this winter, Mr. R. S. Hudson, Minister of Agriculture, said that hitherto during the war years quantity had been all important in the matter of livestock. But for the next few years, while we could not relax the demand for quantity, it should be possible to pay more attention to quality and even perhaps to take it into account in fixing future schedules of prices.

In a speech over a year ago he urged farmers, in their own interests as well as in the interests of minimising the meat shortage that seemed bound to occur in 1946 and 1947, to rear as many calves as they could. " Imagine, then, my feelings when I find that instead of responding to my appeal, made after all in the light of knowledge of all the circumstances, actually fewer calves have been reared in the last six months than in the corresponding period last year. The figures of calves sent for slaughter were no less than 57 per cent. higher than two years ago before my appeal was made.

" The urge to get milk had led many farmers to ignore the progeny of their cows and use cheap and unsuitable bulls, in many cases quite irresponsibly. As a result the average herd is far too often a nondescript collection of animals of varying breeds and crosses. Three years hence the public will expect to get plenty of good English beef and good quality milk.

" I hate to have to admit it, but from what I have heard from those—and they are competent observers—who have come back recently from the States or Canada we no longer lead the world in the general standard of our herds either in breeding, in type, or in performance.

" We have increased the output of milk for human consumption: we have increased winter milk production; but the total annual production of milk in the country is still below pre-war.

" Livestock husbandry is pre-eminently an art for the small man. I believe that with a proper organisation the small man can be as efficient as the large."

Soil Fertility

Earlier in his address the Minister emphasised the fact that if we were to have a secure and stable agriculture providing for a gradually increasing production of food in the future then no agricultural system which drew continuously on the stored up fertility of the soil could be regarded as a sound system, nor could it last in the long run. "We are hearing a lot to-day about soil fertility," he said, "and many people are filled with gloomy forebodings. Fertility depends primarily on the maintenance of a satisfactory soil structure and secondly on an available supply of inorganic materials which form the food for the plants. Our scientists tell us that a general system which has proved successful for the maintenance of a healthy soil is that based upon a rotation of crops, the complementary use of stock and crops and the efficient use of grass and other forage crops. In other words, a system of alternate husbandry. Such a system reduces the danger from pests and diseases and from the exhaustion of particular inorganic plant foods. It reduces, too, the risk of disease in livestock. That is the policy we in this country are pursuing to-day. That is the policy which the Hot Springs Conference recommended for universal adoption as far as possible, by the world.

"As I see it, therefore, two fundamental principles must underlie the future of world agriculture. It must fulfil its task of providing food and raw materials in the quantities and of the kinds required by the human race. At the same time it must see that in doing so the fertility of the soil is preserved for future generations."

* * * * *

WARNING TO POULTRY BREEDERS

With the approach of another hatching season the Ministry of Agriculture warns all poultry breeders of the grave risks attending the feeding of clear eggs and incubator waste to birds used for breeding purposes. These eggs may have been laid by B.W.D. "carrier" hens and may therefore be infected with the organism responsible for that disease. This organism multiplies rapidly in the warm humid atmosphere of the incubator, and at candling time, or when the hatch is taken off, infected eggs are literally teeming with organisms. If they are fed in the mash, a large proportion of birds will become "carriers" and reactors to the blood test. Though the risk of spreading the disease is, of course, greatest where the eggs have come from heavily infected stock, it must be borne in mind that even in flocks where the last blood test was completely negative, infection may be present owing to the introduction of the disease after completion of testing.

The feeding to breeding stock of raw swill containing egg shells and reject eggs is also most inadvisable. Such swill should be boiled for at least one hour before use, and vessels which have contained unboiled swill should be well scalded out before they are again used.

* * * * *

MINISTRY OF AGRICULTURE NEWS SERVICE

Herd Health and the Nation's Milk.—Neighbouring farms often show surprising variations when the acreage of each is compared with the milk obtained. Disease, bad management and poor stock are common causes of these differences in milk yield.

The veterinary "panel scheme" agreed between the National Veterinary Medical Association and the National Farmers' Union is making considerable headway in the campaign against disease. By the end of February this year, 6,678 farmers in England and Wales had placed their herds under the scheme. This means that 266,000 cattle are now receiving regular veterinary examination for mastitis, contagious abortion, sterility and Johne's disease.

Every herd coming under this scheme strengthens the nation's defences against the inroads of loss by disease—a loss that amounts to 50 million gallons of milk a year.

* * * * *

Specialist Advisory Service.—Mr. R. S. Hudson, Minister of Agriculture, was asked recently in the House of Commons what facilities existed whereby a farmer could obtain an accurate analysis of his soil and so be able to apply such information to his cropping and manuring programme.

The Minister replied that for the purpose of this Specialist Advisory Service to farmers, England and Wales are divided into 13 provinces, each centred in a University Department of Agriculture or an Agricultural College. Arrangements were made so that any farmer on application to his County War Agricultural Committee could have his soil analysed at the appropriate centre. On the basis of this analysis advice was given on crops and fertilisers. Improvements in this service were continually being made, but they were governed by the demands on man power required by other forms of national service.

ROYAL ARMY VETERINARY CORPS

The following announcement is made in the issue of *The London Gazette* dated March 14th, 1944: War Subs. Lt. J. D. Rennie (256446) from Black Watch to be Lt., February 18th, 1944.

* * * * *

CANCER RESEARCH

Moving the adoption of the annual report of the British Empire Cancer Campaign, Professor E. C. Dodds, F.R.S., gave a picture in brief of "cancer research as it really is." The whole technique of pathology and biochemical research, he said, had been changed by the introduction of new methods, such as the use of isotopes in studying metabolism, the ultra-centrifuge and electron microscope in the study of the form and structure of matter, and the introduction of the cyclotron in the study of matter from the physical aspect. The technical use of these and other instruments required new and deep knowledge of a most complex character, in addition to the knowledge of the problem to which the instruments were applied.

The cancer research worker of the past, said Professor Dodds, stood no chance of making any fundamental discovery because he was handed a problem far too intricate and complicated in view of the development of his intellectual and scientific processes. It was as though one of the classical Greek philosophers were faced with a modern motor-car engine. All the sciences necessary to its understanding—electricity, magnetism, chemistry, metallurgy—were unknown to him. To-day the research worker in cancer had to start from the beginning. The vast amount of knowledge already accumulated was valuable in plotting out the mountain peaks, but he had now to start on the details, which would take time, though the future looked more certain than ever before.

It was with particular pleasure he drew attention to one positive result—namely, the treatment of malignant disease of the prostate with synthetic oestrogens. The American work on the treatment of this disease by the administration of substances by mouth, and the subsequent complete disappearance of symptoms, had been wholly confirmed, and "for the first time in the history of mankind it is possible to state that one form of cancer can be completely controlled and the patient rendered symptom-free by the administration of a few pills by mouth each day."

The usefulness of this substance, diethylstilboestrol, seemed to be restricted to cancer of the prostate, though, even so, a new line of research had been opened up along which in the near future many workers were sure to pass. The substance is a synthetic chemical product resembling a number of glandular products, and possesses many chemical affinities, all of which, in course of time, will be brought under examination.

The Campaign's Clinical Research Committee this year presents a detailed analysis of over 1,000 cases of primary carcinoma of the lung. The investigation confirms the finding that cancer of the lung is much more common in males than in females, and it shows that engineers, mechanics, painters and decorators are more liable to it than other occupational groups—for example, clerks and typists. The difference is said to be statistically significant, but it has to be borne in mind that the average age of the cancer patient is higher than that of the census population, and many clerks and typists change their occupation before reaching the cancer ages.

Some work is quoted from the cancer research committee of the Marie Curie Hospital suggesting that the cervix uteri is one of the sites of cancer in which great improvement might be expected in the number of cures if intensive propaganda leading to earlier diagnosis were undertaken. In the radiological field the work at St. Bartholomew's cancer research department is reported as suggesting that certain types of cancer are curable by high-voltage *x*-ray therapy (of the order of 1,000 kV), where *x*-ray therapy of the order of 200 kV produces at most a temporary palliation of symptoms.—*Brit. Med. J.*, January 22nd, p. 120.

* * * * *

Filtered Sperm Oil.—The British Standards Institution, 28, Victoria Street, London, S.W.1, has issued a new standard (B.S. No. 997, Pt. 2) for sperm oil. It forms part of a range of standards which will include sardine, whale, crude sperm, cod-liver and cod oils. Price 2s., post free.

* * * * *

A case of mortality amongst pigs in the Tamworth district of New South Wales, in which 46 deaths occurred in a herd of about 200, was found to be due to a grain ration grossly soiled with the excreta from rats and mice. Deaths ceased when the grain ration was discontinued.—*Farmer and Stock-Breeder.*

PREVENTIVE ACTION AGAINST ENDEMIC GOITRE IN ENGLAND

In a report published in the *Lancet* (1944, January 22nd, p. 107) the Goitre Sub-committee of the Medical Research Council strongly urge the adoption of a national policy of adding a trace of iodine to all common salt consumed in the country. The proportion recommended is one part of potassium iodide to one hundred thousand parts of common salt.

Commenting editorially on the above recommendation the *Lancet* says that, "In the absence of morbidity figures for the non-notifiable diseases and of reliable clinical standards of diagnosis it is impossible to give even an approximate figure for the incidence of simple goitre in these islands. But, without taking into account the transitory thyroid enlargements of early life, it must be accepted that the disease remains a common one; it occurs sporadically throughout the country and with a much higher incidence along the 'goitre belt' which runs from Cornwall to the north. Even though serious disability is relatively rare, goitre disfigures and inconveniences many thousands of women and a smaller number of men, and cretinism has not been abolished. War-time nutritional conditions, among them the continued shortage of fish, are conducive to an increased incidence of goitre. The population particularly at risk is scattered diffusely through the country, particularly in rural areas and among small communities which are least accessible to education and propaganda. If, as has proved possible during the war, a contribution to national health can be made by the compulsory employment of an approved standard flour for our daily bread—a measure which, though not universally enjoyed, has at least been generally accepted—it seems both possible and reasonable to attempt a further contribution to national health by adding to the salt a proportion of iodine so small that it could affect neither its savour nor its culinary use. In many districts and homes the additional iodine consumed would do no more than compensate for the deficient intake due to a low iodine content in food and drinking water. There is no good evidence from other countries that the minute quantity of iodine proposed has any deleterious effect either on a healthy person or on the owner of an established goitre, whether of simple or thyrotoxic type.

"The arguments for national prophylaxis are therefore strong. We may indeed have been a little dilatory in not accepting them as set out so convincingly at the International Goitre Conference of 1927,[1] when Wagner-Jauregg (Vienna), Muggia (Sondrio) and Silberschmidt (Zürich), in the light of their existing experience, all commended general prophylaxis by means of iodised salt (KI, 1 in 200,000), and De Quervain greeted the proposal as a milestone in progress. If by iodising salt it proves possible to bring about a major reduction in the incidence of simple goitre, both endemic and sporadic, and if at the same time with the aid of such compounds as thiourea we can convert Graves's disease into a more benign and tractable malady, medicine—once more applying physiological and chemical knowledge—will have two new triumphs to record, and incidentally may write *finis* to a brilliant chapter in the history of special surgery."

It may be added that from the veterinary standpoint the importance of iodine as well as of other "trace" elements in the dietary is now becoming increasingly recognised, and we may await in the near future, as the fruit of researches now in progress, recommendations for supplementary feeding of specially compounded mineral "licks" whether universally or appropriately prescribed for special areas. Doubtless what has been found to apply regarding symptoms of iodine deficiency in certain areas to the human subject applies equally to the indigenous domestic animals.

J. T. E.

(1) *Lancet*, 1927, ii. 1240, and 1928, i. 345.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

* * * * *

DEFENCE SOCIETY

Sir,—In answer to the serious accusations made by Major Hamilton Kirk against The National Veterinary and Mutual Defence Society in your issue of the 11th instant, I should have liked to have sent a copy of the correspondence between Major Kirk and the Society, but as the case is *sub judice* this cannot be done.

For the information of the profession, I may say the case was purely one of a boarding kennel nature, *i.e.*, the non-return of a dog on demand. There was no question of veterinary attention or treatment.

The Council of the Society gave serious consideration to the case and came to the conclusion that actions arising from the boarding of animals, *per se*, do not come within the scope of the Society's work.

The Council of the Society feel sure that the majority of its members do not expect, for the nominal subscription of 10s. 6d. per year, unlimited cover for all contingencies arising from the running of extensive boarding kennels.

Had Major Kirk's case been one of a veterinary nature he would, I am sure, have received all the help the Society could have given.

With regard to the recent case of Messrs. Sutton, Stainton & Ollerhead, the defence was prepared in consultation with the Society, and as soon as an account for the legal and witnesses' expenses is received it will be met by the Society.

With this explanation, Sir, I will leave it to the profession to judge for themselves whether or not the Society treated Major Kirk's application for assistance in a proper manner.

Whilst writing, I may say that there is a certain amount of misunderstanding in the minds of some members that the Society is a Debt Collecting Society. This is not so. If a counter-claim alleging professional inattention or maltreatment is lodged against a claim for professional services rendered, then the Society may, after due consideration, defend the counter-claim.

Yours faithfully,
F. Hopkin,
Hon. Sec. and Treasurer,

The National Veterinary Benevolent and Mutual Defence Society.

35, Manchester Road,
Knutsford, Cheshire.

* * * * *

IN FOAL TO A CASTRATE

Sir,—I was interested to read Mr. Forbes's communication. Several years ago, I castrated a cart colt, and having done so, a mare in oestrus was brought into the yard for me to perform an operation on her eye.

The colt promptly served her and she was got in-foal. I have heard it stated that a castrate is capable of doing this for approximately two to three days after operation, but perhaps others can express a more definite opinion on this.

Yours faithfully,
J. F. D. Tutt.

"Rothiemurchus,"
St. Cross, Winchester.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV).

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Parasitic Mange*	Sheep Scab	Swine Fever
Feb. 1st to 15th, 1944 ...	15	—	—	6	31
Corresponding period in—					
1943 ...	18	—	2	23	22
1942 ...	16	3	5	15	19
1941 ...	22	20	2	18	127
Total Jan. 1st to Feb. 15, 1944	39	3	3	40	79
Corresponding period in—					
1943 ...	46	8	2	51	63
1942 ...	46	3	8	62	61
1941 ..	74	71	4	63	377

NOTE.—The figures for the current year are approximate only.
* Excluding outbreaks in Army Horses.